

## CLAIMS

1. A flexible ultrasonic transducer, comprising a plurality of ultrasonic transducer elements, each of said ultrasonic transducer elements in turn comprising:
  - 5 a base, made of flexible material, having an upper side and a lower side, with a support set on said upper side on two lateral sides thereof;
  - a membrane, able to perform vibrations, having an outer side and an inner side, which is laid on said support;
  - a first electrode placed on said base and a second electrode placed in said membrane,
  - 10 said first and second electrodes being connected with a voltage source;
  - wherein manufacturing steps are reduced without increasing cost and, by said substrate being flexible, emission and reception of ultrasonic waves as well as an effective area are enhanced, with less attenuation of ultrasonic waves, resulting in more effective sensing.
2. The flexible ultrasonic transducer according to claim 1, wherein said upper side of
 - 15 said base has a depression.
3. The flexible ultrasonic transducer according to claim 1, wherein said base is made of at least one nonuniform material.
4. The flexible ultrasonic transducer according to claim 1, wherein said membrane is made of at least one nonuniform material.
- 20 5. The flexible ultrasonic transducer according to claim 1, wherein said membrane is made of at least one material.
6. The flexible ultrasonic transducer according to claim 1, wherein said first electrode has an electricity conducting element inserted in said base.
7. The flexible ultrasonic transducer according to claim 1, wherein said first electrode
 - 25 is inserted between said upper and lower sides of said base.
8. The flexible ultrasonic transducer according to claim 1, wherein said second electrode is inserted between said outer and inner sides of said membrane.
9. The flexible ultrasonic transducer according to claim 1, wherein said support has a top surface.
- 30 10. The flexible ultrasonic transducer according to claim 9, wherein a membrane is

placed on said top surface of said support.

11. The flexible ultrasonic transducer according to claim 10, wherein said inner surface of said membrane is placed on said top surface of said support.

5 12. The flexible ultrasonic transducer according to claim 1, wherein said support is made of flexible material.

13. The flexible ultrasonic transducer according to claim 1, wherein said base is made of electricity conducting material.

10 14. The flexible ultrasonic transducer according to claim 1, wherein said base, if made of electricity conducting material, houses said first electrode, said first and second electrodes being connected with a voltage source.

15 15. The flexible ultrasonic transducer according to claim 1, wherein said base and said support form an integrated body.

16. The flexible ultrasonic transducer according to claim 14, wherein said first and second electrodes are made of gold, silver, copper, nickel or aluminum.

17. The flexible ultrasonic transducer according to claim 1, wherein said base, said support and said membrane are made of silicon,  $\text{Si}_3\text{N}_4$ , polysilicon, kapton, nickel, teflon, resin, plastics, polyester, photoresist or polymolecular material.

18. The flexible ultrasonic transducer according to claim 1, wherein said support and said base are made of flexible material.

20 19. The flexible ultrasonic transducer according to claim 1, wherein said support and said base are made of different materials, one of which is not flexible.